

## DD(X) LAND ATTACK DESTROYER



In November 2001 the Navy restructured the DD21 Program and redesignated it DD(X) to focus on technology development and maturation, including robust land-based and at-sea testing of transformational technologies that could be leveraged across multiple ship classes. The Navy plans to conduct a spiral design review to assess the merits of achieving various levels of capability in a family of multi-mission ships, including the Land Attack Destroyer DD(X), a future cruiser CG(X) and a Littoral Combat Ship (LCS). The destroyer class will be designed first and draw heavily on the research and design work already performed for the DD 21. The DD(X) will use a more gradual spiral development approach consisting of several flights of destroyers leading to the final desired capability rather than the more risky single step approach envisioned for DD 21.

As in DD 21, the DD(X) Flight I is envisioned to have electric drive and will feature an integrated power system. The integrated power system design will allow sharing of electrical power between propulsion motors and other uses. Another DD(X) Flight I feature is an Advanced Gun System (AGS), which will meet land attack and surface mission requirements. Each AGS will consist of a single-barrel 155mm gun supplied by an automated magazine that will carry a family of long-range land attack and surface projectiles. The DD(X) will also include advances in survivability and computing power that will allow a significant reduction in crew size. Additionally, as these features are examined and refined and new technology introduced, the hope is to reduce manning with each succeeding flight.

The DD(X) will provide independent forward presence/deterrence and operate as an integral part of Naval, Joint, and Combined maritime forces. Tailored for land attack, the DD(X) mission is to carry the war to the enemy through offensive operations. It will provide precision engagement and dominant maneuver by conducting operations that include firepower support for amphibious and other ground forces and the launch of precision strike weapons. DD(X) will also provide friendly forces full dimensional protection from enemy attack through the establishment and maintenance of surface and undersea superiority and local air defense. Signature reduction is to be incorporated into the DD(X) design, allowing it to operate in all threat environments. DD(X) is the replacement for retiring *Spruance* (DD 963) class destroyers and *Oliver Hazard Perry* (FFG 7) class frigates, which are reaching the end of useful service life.

## **BACKGROUND INFORMATION**

In November 2000, two competing industry teams delivered DD 21 system preliminary designs and Smart Product Models that included virtual prototypes of their proposed DD 21 systems. No downselect was made and the DD 21 program was put on indefinite hold in May 2001 pending the administration's plan to transform the services. The program was on hold until November 2001 when DD 21 was restructured into the DD(X) program. In spring 2002 the Navy plans to select one of the two teams to act as the design agent for DD(X). The lead ship will be acquired under a separate contract in FY05.

During 4QFY98, an LFT&E Weapon Effects Test was performed against ex-USS *Richmond K. Turner* (CG 20) by detonating an onboard explosive charge. A second Weapon Effects Test completed during 2QFY00 included the firing of a live, subsonic SLAM-ER missile against ex-USS *Dale* (CG 19) and the detonation of an onboard explosive charge. The objectives of these tests were to generate weapon effects data needed for the improvement and validation of damage models and to demonstrate real threat weapon damage on Navy ships to industry designers. The second test also examined ballistic damage from missile impact and weapons-induced fires. Data collected from these tests, performed for the DD 21 program, will be used to validate damage models, which will be used for the design and vulnerability assessment of DD(X). The post-test exhibition and documentation of the damage provided a valuable database for the survivability design of DD(X).

## **TEST & EVALUATION ACTIVITY**

Activity has been limited due to the program's delay and restructuring, but DOT&E has participated in Multi-Function Radar test planning meetings and Advanced Gun System program reviews. The Advanced Gun System core program continues to make progress in gun, projectile, and propellant development, which will be part of the DD(X) design. In August 2001, United Defense Limited Partnership successfully fired a slug projectile from the first of three Advanced Gun System test barrels. DOT&E has been monitoring initial planning efforts for a FY02 Weapon Effects Test that will examine damage mechanisms associated with supersonic threat weapons.

## **TEST & EVALUATION ASSESSMENT**

Because of the lengthy DD 21 program hold, DOT&E's assessment is unchanged from that detailed in last year's report. The DD 21 Program established a solid framework for T&E. The DD(X) program should use that work and begin a more focused T&E effort once DD(X) programmatics become clearer. The TEMP for the new program must provide a clear T&E roadmap and show that the T&E program will produce the data necessary to support an informed Milestone decision. DOT&E strongly recommends a high level of early OT and user community involvement in performing Early Operational Assessments (EOAs). These EOAs provide opportunities to identify and correct any significant shortcomings in the DD(X) design, which should reduce the requirement for costly changes during the construction process.